

CLAIMS

1. A method of communicating between a first node and one or more further nodes in an optical communications system, the method comprising:

- i) receiving at the first node, an optical signal transmitted from a first further node over an optical fibre link;
- 5 ii) detecting, at the first node, the optical signal using an electro-absorption modulator and producing thereby an electrical signal representing information carried by the optical signal; and
- 10 iii) imposing, using said electro-absorption modulator, an information-carrying modulation onto the received optical signal and feeding the thus modulated optical signal into an optical fibre link to transmit it to a second further node; wherein step ii and step iii are carried out with the electro-absorption modulator subject to the same DC operating conditions.

15 2. A method as claimed in claim 1, wherein step ii and step iii are carried out simultaneously.

3. A method as in claim 1, wherein said first further node and said second further node are a single node.

20 4. A method as claimed in claim 1, wherein said electrical signal is an RF or microwave signal.

25 5. A method as claimed in claim 4, wherein the electrical signal is applied to an antenna.

6. A method as claimed in claim 1, wherein in step iii said information-carrying modulation is an RF or microwave signal.

5 7. A method as claimed in claim 6, wherein said information-carrying signal is an RF or microwave signal provided from an antenna.

8. A method as claimed in claim 7 wherein the electrical signal is applied to an antenna, the antenna to which the electrical signal is applied and the antenna
10 which provides said information carrying signal are constituted by a single antenna.

9. A method as claimed in claim 7, wherein the electrical signal is applied to a single antenna.

15 10. A method as claimed in claim 9, wherein the base station, in use, supports the GSM and DECT systems.

11. An optical communications network includes a remote terminal characterised in that said terminal comprises an electro-absorption modulator that

20 i) detects an incoming optical signal from a first portion of the optical communications network whilst simultaneously

ii) modulating said incoming optical signal, said optical signal being transmitted to a further portion of the optical communications network.

12. An optical communications network according to claim 11, wherein
the optical communications network uses a frequency division multiplexing system.

13. A bi-directional optical-electrical signal transducer comprising:
5 an electro-absorption modulator having optical signal input and output ports
and an electrical signal input/output port, whereby:
first information-bearing optical signals presented to said optical signal input
port produce corresponding first information-bearing electrical signals at said
electrical signal input/output port, and
10 second information-bearing electrical signals presented to said electrical signal
input/output port produce corresponding second information bearing optical signals
modulated onto an optical signal at said optical signal output port.

14. A bi-directional optical-electrical signal transducer as in claim 13
15 wherein said electro-absorption modulator functions simultaneously and at the same
DC operating bias conditions to produce said output optical and electrical signals.

15. A bi-directional optical-electrical signal transducer as in claim 13
further comprising at least one RF antenna electrically connected to said electrical
20 signal input/output port.